This equation is known as the moment-curvature equation and demonstrates that the curvature is directly proportional to the bending moment and inversely proportional to EI, where EI is the flexural stiffness of the pile.

During a load test, collected strain-evaluated moment data are used to curve fit the function plotted with depth from the point of load application. Through integration and differentiation, these data can provide soil reaction values with depth. For example, a fourth order regression line is selected to curve fit the data shown in Figure 6 and corresponding variable are obtained as follows:

$$y = a + bx + cx^2 + dx^3 + ex^4 \tag{14}$$

Where: a, b, c, d, e = the coefficients of the regression line; and,

x = pile segment length (m).

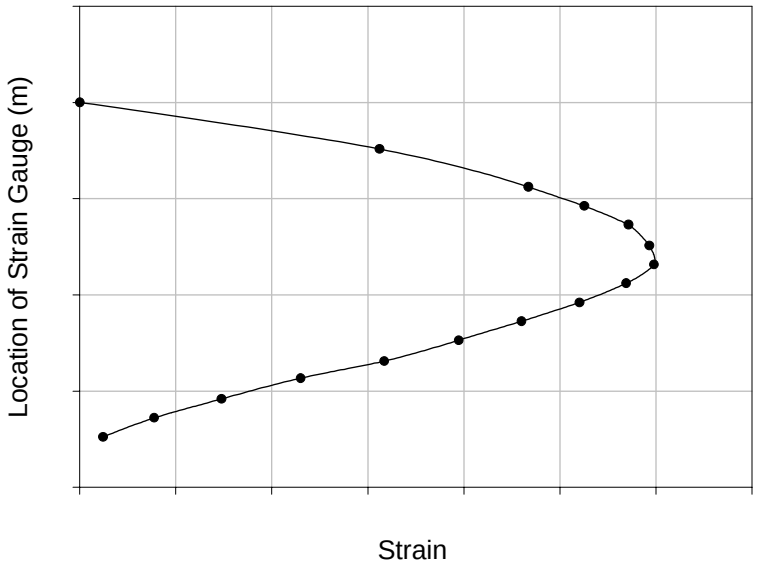

Figure 6. Typical Measured Strain from Testing

Once this equation is obtained, it is differentiated, with respect to depth, three times to estimate the resistance of soil P (kN/m). This equation can be integrated twice to obtain y (m). Alternatively, the lateral deflection can be directly monitored during testing using inclinometer system. These values are then used to create P-y curves with depth .